INDIGENOUS DEVELOPMENT OF A HIGH FORCE RATING ELECTRODYNAMIC SHAKER SYSTEM

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Abstract

In launch vehicles, all systems are subjected to vibration environment during flight. Vibration tests are performed to find out structural integrity and performance of the system for the intended use in a launch vehicle, under vibration environment. The vibration tests are carried out by employing suitable shaker as standalone unit or with combination of slip table, depending upon the type of vibration levels and axis of vibration. Out of different types of shakers, electrodynamic shakers have wide frequency range so that the sine, shock and random tests are possible.

The force requirement of a shaker is dictated by the mass of the systems to be tested and the test levels. ISRO' future vehicle subassemblies demand nearly 250 kN force capacity for the shaker. Indigenous development of such a high capacity system was initiated first time in the country, for self reliance in designing and realizing such high capacity test systems and to meet the schedule critical launch vehicle sub assembly test activities. This paper describes the challenges in the development of such a high capacity system in Vikram Sarabhai Space Centre(VSSC), Trivandrum.

Invited paper